

## **REMARKS**

The indication that the proposed drawing correction and/or proposed substitute sheet filed on May 27, 2003 has been approved is noted. However, it is submitted that the drawing filed on May 27, 2003 was a *copy* of Figure 5 originally filed with the application, as noted on page 1 of Applicants' last response, to evidence that no drawing corrections/substitute sheets need to be filed. Accordingly, it is believed no further submission of corrected drawings is necessary at this time.

The indication of allowable subject matter in claims 6-14 and 23 is acknowledged and appreciated. In view of the following remarks, it is respectfully submitted that all claims are patentable over the cited prior art.

### **I. CLAIMS 1, 21, 22 AND 24 ARE PATENTABLE OVER ONO ET AL. IN VIEW OF COBBLEY ET AL. AND DOMINIC ET AL.**

Claims 1, 21, 22 and 24 stand rejected under 35 U.S.C. § 103 as being unpatentable over Ono et al. '551 ("Ono") in view of Cobbley et al. '832 ("Cobbley") and Dominic et al. '735 ("Dominic"). Claim 1 is independent. This rejection is respectfully traversed for the following reasons. In particular, it is submitted that the proposed combination is improper and even assuming *arguendo* proper, does not disclose or suggest the claimed invention.

#### **A. Proposed combination does not disclose claimed invention**

Claim 1 recites in pertinent part, "a testing step ...; and a separating ... step of separating said semiconductor device from said substrate after heating a bonding place of said adhesive ... if it is determined that said electrical properties are poor in said testing step" (emphasis added). The Examiner admits that Ono does not disclose a testing step

and therefore modifies Ono by adding the testing process disclosed by Cobbley thereto. The Examiner further admits that the testing step of "Cobbley et al. do not specifically disclose that the separation step is done after heating a bonding place ... " and therefore relies on Dominic as allegedly disclosing a heating step to soften the adhesive for a separation step.

However, it is respectfully submitted that the heating step disclosed by Dominic is NOT for softening the adhesive *for separating* the semiconductor device from the substrate. Rather, the heating step of Dominic is performed as part of the *bonding* step for bonding the semiconductor device to the substrate. In this regard, Dominic is merely cumulative to the heating performed in Cobbley (*see, e.g.*, col. 2, lines 52-54) with regard to forming part of the bonding process.

Indeed, Dominic states that the "application of heat ... helps to soften the adhesive and make it more conducive to *receiving* the chip" (emphasis added; *see* col. 3, lines 44-45). After "receiving" the chip, the adhesive is cured to bond the chip to the substrate (*see* col. 1, lines 34-38 and col. 3, line 46 – col. 4, line 33). Accordingly, at best, modifying Cobbley by adding the heating disclosed by Dominic would result in a two-step heating process during the bonding step whereby the adhesive is heated slightly to soften the adhesive and allow it to more easily receive the chip and then subsequently cured to bond the chip onto the substrate at the bonding place. The combined teachings of the cited prior art does not suggest heating the "bonding place" of the semiconductor device to the chip as part of the separating step. Dominic does not overcome the deficiencies of Cobbley set forth in Applicants' response filed on May 27, 2003 and is at best cumulative thereto.

The Examiner is directed to MPEP § 2143.03 under the section entitled "All Claim Limitations Must Be Taught or Suggested", which sets forth the applicable standard:

To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. (citing *In re Royka*, 180 USPQ 580 (CCPA 1974)).

In the instant case, the pending rejection does not "establish *prima facie* obviousness of [the] claimed invention" as recited in claim 1 because the proposed combination fails the "all the claim limitations" standard required under § 103.

**B. Proposed combination improper**

It is respectfully submitted that the Examiner has improperly modified a modifying reference. Although it is understood that there is no limit to the number of references that can be used to modify a *primary* reference in an attempt to reach the claimed invention, it is respectfully submitted that using a third reference to modify a feature taught in a *secondary* reference used to modify the primary reference is too attenuated from the claimed invention to be considered obvious.

In the instant case, the Examiner relies on Ono as the primary reference, and then relies on Cobbley as the secondary reference for modifying Ono by adding the testing procedure. The Examiner then modifies the testing procedure of Cobbley (i.e., secondary reference) with the heating disclosed by Dominic. Accordingly, the Examiner has improperly modified a modifying reference.

For all the foregoing reasons, it is respectfully submitted that claim 1 is patentable over the cited prior art.

### III. DEPENDENT CLAIMS

Claims 2-5 stand rejected on the same substantive grounds set forth in the Office Action dated February 28, 2003. These rejections are respectfully traversed for the same reasons set forth in Applicants' previous response filed on May 27, 2003. Although the Examiner asserted that the new grounds of rejection rendered moot Applicants' arguments *with respect to claim 1*, the Examiner has maintained the rejections against claims 2-5 without responding to Applicants' arguments directed to the independent patentability of these dependent claims. The Examiner is directed to MPEP § 707.07(f) under the heading "Answer All Material Traversed", which requires the Examiner to respond to all arguments raised in Applicants' response, including those directed to the patentability of the dependent claims.

In the instant case, it is respectfully submitted that the Examiner has not answered Applicants' traverse with respect to the independent patentability of the dependent claims. Accordingly, if the Examiner maintains any one or more of the pending rejections, it is respectfully requested that the Examiner respond to arguments presented for the patentability of any claims whose rejections are maintained. For the Examiner's convenience, the Applicants' arguments for the dependent claims are reprinted below:

Under Federal Circuit guidelines, a dependent claim is nonobvious if the independent claim upon which it depends is allowable because all the limitations of the independent claim are contained in the dependent claims, *Hartness International Inc. v. Simplimatic Engineering Co.*, 819F.2d at 1100, 1108 (Fed. Cir. 1987). Accordingly, as claim 1 is patentable for the reasons set forth above, and because neither Tsukahara nor Kohara et al. were relied on for overcoming the deficiencies of Ono et al. and Cobbley et al., it is respectfully submitted that claims 2-5 which depend on claim 1 are also patentable. In addition, it is respectfully submitted that claims 2-5 are patentable based on their own merits by adding novel and non-obvious features to the combination.

For example, it is respectfully submitted that the proposed combinations are improper because the Examiner has not provided the requisite *objective* evidence *from the prior* art that suggests the desirability of the proposed combination. The cited prior art does not provide any motivation or rationale for making the proposed combination. The Examiner alleges only that the combination would have been obvious "to enable formation of the adhesive material." However, it is respectfully submitted that Ono et al. equally enables formation of the adhesive material. It is respectfully submitted that merely enabling the formation of the adhesive layer, which is already enabled by Ono et al., is not a sufficient basis for making a modification under § 103.

The Examiner has not identified any rationale or motivation, based on objective evidence from the prior art, that would "suggest the desirability" of *replacing/modifying* the adhesive layer of Ono et al. with those disclosed by Tsukahara or Kohara et al.. Simply because Ono et al. can be modified by Tsukahara or Kohara et al. does not make doing so obvious under § 103 without some objective evidence from the prior art that suggests the desirability of the combination (*see* cited MPEP sections below). In the instant case, the cited prior art does not suggest that replacing the adhesive layer of Ono et al. with those disclosed by Tsukahara nor Kohara et al. would be beneficial or desirable.

As is well known in patent law, a *prima facie* showing of obviousness can only be established if the prior art "suggests the desirability" of the proposed combination using objective evidence. The Examiner is directed to MPEP § 2143.01 under the subsection entitled "Fact that References Can Be Combined or Modified is Not Sufficient to Establish *Prima Facie* Obviousness", which sets forth the applicable standard:

The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. (*In re Mills*, 16 USPQ2d 1430 (Fed. Cir. 1990)).

The Examiner is further directed to MPEP § 2143.01 under the subsection entitled "Fact that the Claimed Invention is Within the Capabilities of One of Ordinary Skill in the Art is Not Sufficient by Itself to Establish *Prima Facie* Obviousness", which sets forth the applicable standard:

A statement that modifications of the prior art to meet the claimed invention would have been [obvious] because the references relied upon teach that all aspects of the claimed invention were *individually* known in the art is *not* sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the teachings of

the references. (citing *Ex parte Levengood*, 28 USPQ2d 1300 (Bd. Pat. App. & Inter. 1993)).

In the instant case, the Examiner alleges that each of the proposed combinations would have been obvious "to enable formation of the adhesive material." It is submitted that the asserted motivation is *per se* improper because Ono et al. does not need the teachings of Tsukahara or Kohara et al. in order to "enable formation of the adhesive layer" as it can form the adhesive layer without such teachings, and so the Examiner's asserted motivation provides no rationale for making the modification.

Moreover, the Examiner has not indicated why one would *desire* modifying Ono et al. with the teachings of Tsukahara or Kohara et al.. Rather, the Examiner simply alleges that one would be capable of doing so. Accordingly, pursuant to the above-cited sections of the MPEP, the cited *prior art* does not provide the requisite objective evidence that "suggests the desirability" of the proposed combinations. Only Applicants' specification provides the motivation for making the proposed modifications.

At best, the Examiner has attempted to show only that the elements of the claimed invention are *individually* known without providing a *prima facie* showing of obviousness that the *combination* of elements recited in the claims is known or suggested in the art. It is therefore submitted that the proposed combination is based solely on improper hindsight reasoning, whereby the Examiner selected bits and pieces of the prior art and used only Applicants' specification as a guide to reconstruct the claimed invention. For all the foregoing reasons, it is submitted that the proposed combinations are improper.

Based on all the foregoing, it is respectfully requested that the rejection of claims 2-5 under 35 U.S.C. § 103 be withdrawn.

#### IV. NEW CLAIMS

New claims 21-24 are submitted to be patentable based on their own merits by adding novel and non-obvious features to the combination. For example, with respect to claims 22 and 23, neither Cobbley et al. nor Ono et al. disclose or suggest "wherein each of said regions in said bonding step is not involved in an electrical connection."

In contrast, Ono et al. expressly discloses bonding chip 6 to circuit board 9 using conductive adhesives 4,5 in regions which *are* involved in electrical connection. That is, conductive adhesives 4,5 electrically connect the electrode pad 3 of the chip 6 to the terminal electrode 8 of the circuit board 9. Similarly, Cobbley et al. discloses bonding dice 28 and PCB 22 together using conductive epoxy dots 26 for making the *electrical connection* between the dice 28 and the PCB 22.

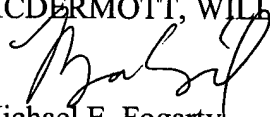
### CONCLUSION

Having fully responded to all matters raised in the Office Action, Applicants submit that all claims are in condition for allowance, an indication for which is respectfully solicited. If there are any outstanding issues that might be resolved by an interview or an Examiner's amendment, the Examiner is requested to call Applicants' attorney at the telephone number shown below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

MCDERMOTT, WILL & EMERY

*for*  #46,692  
Michael E. Fogarty  
Registration No. 36,139

600 13<sup>th</sup> Street, N.W.  
Washington, DC 20005-3096  
(202) 756-8000 MEF:MWE  
Facsimile: (202) 756-8087  
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